

What is claimed is:

1. In a method for repairing a multicast session in a network, the steps comprising:

5        sending a request message from a source to a subscription server in the network, requesting a repair service for an original multicast session originated by said source;

         sending an enabling signal from said subscription server to a plurality of retransmit servers in the network, to buffer data traffic from said original multicast session, in response to said request;

10        buffering a copy of said data traffic at each of said plurality of retransmit servers and monitoring errors in each copy;

         automatically selecting with said plurality of retransmit servers at least one retransmit server from among said plurality, having a minimum of said errors in its respective copy; and

15        sending said respective copy to repair servers in the network to enable said repair server to automatically provide a transparent repaired multicast session derived from said respective copy.

20        2. The method of claim 1, wherein said plurality of retransmit servers periodically transmit messages to inform the repair servers about repaired multicast sessions that are available.

3. In a method for repairing a multicast session in a network, the steps comprising:

25        sending a request message from a source to a subscription server in the network, requesting a repair service for an original multicast session originated by said source;

         sending an enabling signal from said subscription server to at least one retransmit server and a repair server in the network, to buffer data traffic from said original multicast session, in response to said request;

30        buffering a copy of said data traffic at said retransmit server;

buffering said data traffic in said repair server and monitoring received errors therein;

said repair server automatically sending a request for said copy in response to said monitoring, and

5 sending said copy to the repair server to enable said repair server to automatically provide a transparently repaired multicast session derived from said copy.

4. A network, including a source of multicast packets in a multicast session and a plurality of multicast recipients in that session, comprising:

10 a subscriber server in the network, maintaining subscription information about said source;

said subscriber server receiving a request from said source to establish a multicast session to transmit multicast packets in the network and forming a setup message;

15 a plurality of retransmission servers in the network receiving said setup message from said subscriber server and in response, buffering portions of the packets during the multicast session;

a repair server in the network providing received ones of the packets to said recipients during the multicast session, the repair server including a missing packet detector;

20 said repair server automatically detecting missing packets and sequentially requesting missing packets from respective ones of the plurality of retransmission servers;

a billing system coupled to the subscriber server, receiving charging information from the subscriber server about said multicast session.

25

5. In a method for repairing a multicast session in a network, the steps comprising:

registering a request from an IP multicast source with a subscription server to indicate that the source wants a multicast session repaired;

30 sending the request to a plurality of retransmit servers;

listening at each retransmit server to the multicast session and evaluating its quality;

periodically reporting the quality received by each of the retransmit servers, to other retransmit servers;

5 comparing at each retransmit server the quality received for a specific IP multicast session to the quality received by other retransmit servers;

determining if a retransmit server has more than "L%" packet loss or is not one of "N" retransmit servers with highest quality, and if so then stopping the retransmit server from listening to the session;

10 periodically transmitting by a retransmit server, its IP address and port number and an IP address and port number of each multicast session for which it has buffered packets;

monitoring at a repair server transmissions by retransmit servers to determine which retransmit server can help repair a specific IP multicast data stream;

15 determining at a repair server that packets are missing in an IP multicast data stream, and communicating with at least one retransmit server that can supply the missing packets; and

sending charges from the subscription server to a billing system for providing a multicast repair service in response to the source's request.

20 6. The method of claim 5, wherein a plurality of retransmit servers periodically transmit unicast messages to inform the repair servers about repaired multicast sessions that are available.

25 7. The method of claim 5, wherein a plurality of retransmit servers periodically transmit multicast messages to inform the repair servers about repaired multicast sessions that are available.